Claim Chart—Part II

U.S. Patent No. 6,359,231	Claims in BELLI Application	Support in BELLI Application
1. An electrical cable consisting essentially of a conductor,	74. An electrical cable consisting essentially of a conductor,	The specification discloses an electrical cable with a conductor (p. 4/ll. 1-2 and 12-14).
a layer of insulation around said conductor	a layer of insulation around said conductor	The cable has an insulating layer around the conductor (p. 4/ll. 12-14).
and a material flowable at about 25° C. between the conductor and the layer of insulation which provides self-sealing properties to the cable	and a material flowable at about 25° C. between the conductor and the layer of insulation which provides self-sealing properties to the cable	Self-repairing material can be placed between the conductor and the insulating layer (p. 4/ll. 12-14 and 30-33). The self-repairing material is flowable at ambient temperature (p. 3/ll. 34-36 and p. 8/ll. 4-7), which is normally considered to be about 25°C (Hawley's Condensed Chemical Dictionary, 13th Edition, defines room temperature as an ambient temperature from 20-25°C).
and wherein said material is a dielectric that does not substantially absorb moisture or swell upon contact with moisture	and wherein said material is a dielectric that does not substantially absorb moisture or swell upon contact with moisture	The self-repairing material can be a dielectric (p. 6/ll. 4-6). And the self-repairing material has a capacity to exert an effective blocking action against external moisture and/or has a low saturation water content (p. 9/ll. 27-35).
having capacity, upon creation of a discontinuity in the layer of insulation of reestablishing continuity in the layer of insulation in a reversible manner.	having capacity, upon creation of a discontinuity in the layer of insulation of reestablishing continuity in the layer of insulation in a reversible manner.	The self-repairing material has capacity, upon creation of discontinuity in the insulating layer, of re-establishing continuity in the insulating layer in a reversible manner (p. 4/ll. 25-29).

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2. The electrical cable of claim 1 wherein said material has a 100 gram needle penetration value greater than 100 tenths of a millimeter at 25° C.	75. The electrical cable of claim 74 wherein said material has a 100 gram needle penetration value greater than 100 tenths of a millimeter at 25° C.	In addition to the support shown above for claim 74 (copied claim 1), at least one of the "particularly preferred" polyisobutenes (Vistanex®) (p. 11/l. 2) of the present application has a 100 gram needle penetration value greater than 100 tenths of a millimeter at 25°C, according to Society of Automotive Engineers standard AMS 210-10 (see http://www.exxonmobilchemical.com/, copy attached as Exhibit E).
3. The electrical cable of claim 2 wherein said material contains inert filler material.	76. The electrical cable of claim 75 wherein said material contains inert filler material.	In addition to the support shown above for claims 74 and 75 (copied claims 1 and 2), the specification discloses that the self-repairing material may contain filler material such as pyrogenic silica, bentonite, kaolin, calcium carbonate, aluminum hydroxide, magnesium hydroxide, talc, and precipitated silica (p. 11/ll. 34-35 and p. 14/ll. 5-7).
4. The electrical cable of claim 2 wherein said material is substantially free of solvents and oils.	77. The electrical cable of claim 75 wherein said material is substantially free of solvents and oils. 11, 4-6	In addition to the support shown above for claims 74 and 75 (copied claims 1 and 2), the specification discloses that the self-repairing material may be one or more amorphous polymers alone and, thus, substantially free of solvents and oils (p. 11/ll. 4-6).
5. The electrical cable of claim 2 wherein said material is a polymeric material.	78. The electrical cable of claim 75 wherein said material is a polymeric material.	In addition to the support shown above for claims 74 and 75 (copied claims 1 and 2), the specification discloses that the self-repairing material may be a polymeric material, such as an amorphous polymer (p. 10/ll. 20-35).

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6. The electrical cable of claim 5 wherein said material is made from low molecular weight copolymers of an isomer.	79. The electrical cable of claim 78 wherein said material is made from low molecular weight copolymers of an isomer. average not low	In addition to the support shown above for claims 74, 75, and 78 (copied claims 1, 2, and 5), the specification discloses that the self-repairing material may be made from low molecular weight copolymers of an isomer, such as polyisobutene having an average molecular weight between 2,000 and 50,000 (p. 10/ll. 36-39).
7. The electrical cable of claim 5 wherein said material is made from isobutene copolymers.	80. The electrical cable of claim 78 wherein said material is made from isobutene copolymers.	In addition to the support shown above for claims 74, 75, and 78 (copied claims 1, 2, and 5), the specification discloses that the self-repairing material may be made from isobutene copolymers (p. 10/l. 26).
8. The electrical cable of claim 5 wherein said material is an isomer.	81. The electrical cable of claim 78 wherein said material is an isomer.	In addition to the support shown above for claims 74, 75, and 78 (copied claims 1, 2, and 5), the specification discloses that the self-repairing material may be an isomer, such as polyisobutene (p. 10/l. 26).
9. The electrical cable of claim 1 wherein the conductor is formed by a plurality of wires stranded together.	82. The electrical cable of claim 74 wherein the conductor is formed by a plurality of wires stranded together.	In addition to the support shown above for claim 74 (copied claim 1), the specification discloses that the conductor generally consists of metal wires plaited together using standard techniques (p. 16/ll. 35-37).

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10. An electrical cable as set forth in claim 1 having empty spaces formed during or after a cable manufacturing process wherein the empty spaces are formed prior to installation of the cable, during the installation of the cable, and after the cable is placed in service, within said layer insulation and between said layer insulation and the conductor, contain the material which provides the cable with self-sealing properties.	83. An electrical cable as set forth in claim 74 having empty spaces formed during or after a cable manufacturing process wherein the empty spaces are formed prior to installation of the cable, during the installation of the cable, and after the cable is placed in service, within said layer insulation and between said layer insulation and the conductor, contain the material which provides the cable with self-sealing properties. ☆	In addition to the support shown above for claim 74 (copied claim 1), the specification discloses that during various stages of the life of an electrical cable, including the manufacturing process, the cable can be stressed and damaged, which means that discontinuities (such as empty spaces) may be formed at any stage of the cable life, including prior to installation of the cable, during installation of the cable, and after the cable is placed in service, and can be formed within the insulating layer and/or between the insulating layer and the conductor (p. 1/ll. 16-21 and p. 2/ll. 35-39). Additionally, the specification discloses providing the flowable self-repairing material during the manufacturing process to fill discontinuities (such as empty spaces) that may be formed (p. 3/ll. 13-29).

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11. A method of making an electrical cable which migrates the effects of voids, puncture, or cracks formed in an insulation layer prior to installation of the cable, during the installation of the cable, and after the cable is placed in service comprising the steps of:	84. A method of making an electrical cable which mitigates the effects of voids, puncture, or cracks formed in an insulation layer prior to installation of the cable, during the installation of the cable, and after the cable is placed in service comprising the steps of:	The specification discloses that during various stages of the life of an electrical cable, including the manufacturing process, the cable can be stressed and damaged, which means that discontinuities (such as voids, punctures, and/or cracks) may be formed at any stage of the cable life, including prior to installation of the cable, during installation of the cable, and after the cable is placed in service, and can be formed within the insulating layer and/or between the insulating layer and the conductor (p. 1/ll. 16-21 and p. 2/ll. 35-39). Additionally, the specification discloses providing the flowable self-repairing material during the manufacturing process to fill discontinuities (such as voids, punctures, and/or cracks) that may be formed (p. 3/ll. 13-29).
(a) forming a conductor,	(a) forming a conductor,	The specification discloses an electrical cable with a conductor (p. 4/ll. 1-2 and 12-14).
(b) applying a layer of material flowable at about 25° C. which provides self-sealing properties on the exterior of the conductor; and	(b) applying a layer of material flowable at about 25° C. which provides self-sealing properties on the exterior of the conductor; and	Self-repairing material can be placed between the conductor and the insulating layer (p. 4/ll. 12-14 and 30-33). The self-repairing material is flowable at ambient temperature (p. 3/ll. 34-36 and p. 8/ll. 4-7), which is normally considered to be about 25°C (Hawley's Condensed Chemical Dictionary, 13th Edition, defines room temperature as an ambient temperature from 20-25°C).
(c) forming an layer of insulation around the conductor	(c) forming an layer of insulation around the conductor	The insulating layer can be formed around the conductor and the layer of self-repairing material (p. 4/ll. 12-14).

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11. (cont.) wherein said material is a dielectric that does not substantially absorb moisture or swell upon contact with moisture,	84. (cont.) wherein said material is a dielectric that does not substantially absorb moisture or swell upon contact with moisture,	The self-repairing material can be a dielectric (p. 6/ll. 4-6). And the self-repairing material has a capacity to exert an effective blocking action against external moisture and/or has a low saturation water content (p. 9/ll. 27-35).
has capacity, wherein upon creation of a discontinuity in the layer of insulation in the cable, the material will reestablish continuity in the layer of insulation of the cable in a reversible manner.	has capacity, wherein upon creation of a discontinuity in the layer of insulation in the cable, the material will reestablish continuity in the layer of insulation of the cable in a reversible manner.	The self-repairing material has capacity, upon creation of discontinuity in the insulating layer, of re-establishing continuity in the insulating layer in a reversible manner (p. 4/ll. 25-29).

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12. The method of claim 11 wherein the conductor is formed by a plurality of wires stranded together.	85. The method of claim 84 wherein the conductor is formed by a plurality of wires stranded together.	In addition to the support shown above for claim 84 (copied claim 11), the specification discloses that the conductor generally consists of metal wires plaited together using standard techniques (p. 16/ll. 35-37).
13. The method of claim 11 wherein said material has a 100 gram needle penetration value greater than 100 tenths of a millimeter at 25° C.	86. The method of claim 84 wherein said material has a 100 gram needle penetration value greater than 100 tenths of a millimeter at 25° C. ☆	In addition to the support shown above for claim 84 (copied claim 11), at least one of the "particularly preferred" polyisobutenes (Vistanex®) (p. 11/l. 2) of the present application has a 100 gram needle penetration value greater than 100 tenths of a millimeter at 25°C, according to Society of Automotive Engineers standard AMS 210-10 (see http://www.exxonmobilchemical.com/, copy attached as Exhibit E).
14. The method of claim 13 wherein said material is a polymeric material.	87. The method of claim 86 wherein said material is a polymeric material.	In addition to the support shown above for claims 84 and 86 (copied claims 11 and 13), the specification discloses that the self-repairing material may be a polymeric material, such as an amorphous polymer (p. 10/ll. 20-35).
15. The method of claim 14 wherein said material is an isomer.	88. The method of claim 87 wherein said material is an isomer.	In addition to the support shown above for claims 84, 86, and 87 (copied claims 11, 13, and 14), the specification discloses that the self-repairing material may be an isomer, such as polyisobutene (p. 10/l. 26).
16. The method of claim 11 wherein said material flows into voids, punctures, or cracks in the layer of insulation formed during the installation of the cable.	89. The method of claim 84 wherein said material flows into voids, punctures, or cracks in the layer of insulation formed during the installation of the cable. ☆	In addition to the support shown above for claim 84 (copied claim 11), it is implicit and understood by one skilled in the art from the disclosure that the flowable self-repairing material can mitigate the effects of voids, punctures, and/or cracks formed in the insulating layer during the installation of the cable by flowing into such voids, punctures, and/or cracks.

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17. The method of claim 11 wherein said material flows into space between the conductor and the layer of insulation formed during the installation of the cable.	90. The method of claim 84 wherein said material flows into space between the conductor and the layer of insulation formed during the installation of the cable.	In addition to the support shown above for claim 84 (copied claim 11), it is implicit and understood by one skilled in the art from the disclosure that the flowable self-repairing material can flow into space between the insulating layer and the conductor formed during the installation of the cable.
18. The method of claim 11 wherein said material flows into space between the conductor and the layer of insulation formed prior to the installation of the cable.	91. The method of claim 84 wherein said material flows into space between the conductor and the layer of insulation formed prior to the installation of the cable.	In addition to the support shown above for claim 84 (copied claim 11), it is implicit and understood by one skilled in the art from the disclosure that the flowable self-repairing material can flow into space between the insulating layer and the conductor formed prior to installation of the cable.
19. The method of claim 11 wherein said material flows into voids, punctures, or cracks in the layer of insulation formed prior to installation of the cable.	92. The method of claim 84 wherein said material flows into voids, punctures, or cracks in the layer of insulation formed prior to installation of the cable.	In addition to the support shown above for claim 84 (copied claim 11), it is implicit and understood by one skilled in the art from the disclosure that the flowable self-repairing material can mitigate the effects of voids, punctures, and/or cracks formed in the insulating layer prior to the installation of the cable by flowing into such voids, punctures, and/or cracks.
20. The method of claim 11 wherein said material flows into voids, punctures, or cracks in the layer of insulation formed after the cable is placed in service.	93. The method of claim 84 wherein said material flows into voids, punctures, or cracks in the layer of insulation formed after the cable is placed in service.	In addition to the support shown above for claim 84 (copied claim 11), it is implicit and understood by one skilled in the art from the disclosure that the flowable self-repairing material can mitigate the effects of voids, punctures, and/or cracks formed in the insulating layer after the cable is placed in service by flowing into such voids, punctures, and/or cracks.

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21. The method of claim 11 wherein said material flows into space between the conductor and the layer of insulation formed after the cable is placed in service.	94. The method of claim 84 wherein said material flows into space between the conductor and the layer of insulation formed after the cable is placed in service.	In addition to the support shown above for claim 84 (copied claim 11), it is implicit and understood by one skilled in the art from the disclosure that the flowable self-repairing material can flow into space between the insulating layer and the conductor formed after the cable is placed in service.
22. The method of claim 11 including applying a water barrier material over the conductor before applying the self-sealing material in step (b).	95. The method of claim 84 including applying a water barrier material over the conductor before applying the self-sealing material in step (b).	In addition to the support shown above for claim 84 (copied claim 11), the conductor may be pre-coated with at least one insulating barrier before applying the self-repairing material (p. 17/l. 38 - p. 18/l. 1). The at least one insulating barrier can be a polymer material such as polypropylene ("PP") (Example 6, pp. 24-30) or silane-crosslinked linear low-density polyethylene ("LLDPE") (Example 7, pp. 30-31). As disclosed by U.S. Patent No. 6,359,231, such a polymer material can be a water barrier material (c. 7/l. 10).
23. The method of claim 22 wherein the water barrier is a polymer sheet.	96. The method of claim 95 wherein the water barrier is a polymer sheet.	In addition to the support shown above for claims 84 and 95 (copied claims 11 and 22), the specification discloses applying the PP and/or LLDPE by extrusion (Example 6, pp. 24-30 and Example 7, pp. 30-31). Application of polymers such as PP and/or LLDPE over a conductor in the form of a polymer sheet is a commonly used, well-known technique providing a substantially equivalent result to application by extrusion.

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24. A method for imparting to a cable comprising a conductor and at least one insulating layer having a capacity of self-repairing the at least one insulating layer,	97. A method for imparting to a cable comprising a conductor and at least one insulating layer having a capacity of self-repairing the at least one insulating layer,	The specification discloses a "method for imparting to a cable comprising a conductor and at least one coating layer a capacity of self-repairing the coating layer" (p. 4/ll. 20-23). Also, originally-filed claim 50: "[m]ethod for imparting to a cable comprising a conductor and at least one coating layer a capacity of self-repairing the coating layer." The at least one coating layer may be one or more insulating coating layers (p. 4/ll. 7-9 and 15-17).

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24. (cont.) the method comprising providing the cable with an inner layer comprising a dielectric material that does not substantially absorb moisture or swell upon contact with moisture is flowable at about 25° C. and has the capacity, upon creation of a discontinuity in the at least one insulating layer, of reestablishing the continuity in the at least one insulating layer in a reversible manner.	97. (cont.) the method comprising providing the cable with an inner layer comprising a dielectric material that does not substantially absorb moisture or swell upon contact with moisture is flowable at about 25° C. and has the capacity, upon creation of a discontinuity in the at least one insulating layer, of reestablishing the continuity in the at least one insulating layer in a reversible manner.	The method comprises "providing the cable with an inner layer comprising a material having the capacity, upon creation of a discontinuity in the coating layer, of re-establishing the continuity in the coating layer in a reversible manner" (p. 4/ll. 24-29). Also, originally-filed claim 50: "the said method comprising providing the cable with an inner layer comprising a material having the capacity, upon creation of a discontinuity in the coating layer, of re-establishing the continuity in the coating layer in a reversible manner." Once again, the at least one coating layer may be one or more insulating coating layers (p. 4/ll. 7-9 and 15-17). The self-repairing material can be a dielectric (p. 6/ll. 4-6). And the self-repairing material has a capacity to exert an effective blocking action against external moisture and/or has a low saturation water content (p. 9/ll. 27-35). The self-repairing material is flowable at ambient temperature (p. 3/ll. 34-36 and p. 8/ll. 4-7), which is normally considered to be about 25°C (Hawley's Condensed Chemical Dictionary, 13th Edition, defines room temperature as an ambient temperature from 20-25°C).

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25. The method according to claim 24 wherein the material is capable of at least partially filing the discontinuity without leaking from the cable in an uncontrolled manner.	98. The method according to claim 97 wherein the material is capable of at least partially filling the discontinuity without leaking from the cable in an uncontrolled manner.	In addition to the support shown above for claim 97 (copied claim 24), the specification discloses that the material of the inner layer can fill up, at least partly, the discontinuity (p. 3/ll. 19-27). The flowability of the material of the inner layer is predetermined so as to prevent the material from leaking in an uncontrolled manner from the cable (p. 3/ll. 34-39). Also, originally-filed claim 51: "[m]ethod according to Claim 50, in which the material of the inner layer is capable of at least partially filling the discontinuity without leaking from the cable in an uncontrolled manner."

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26. A method for manufacturing a cable having a layer of self-repairing material, comprising the steps of:	99. A method for manufacturing a cable having a layer of self-repairing material, comprising the steps of:	The specification discloses a process for manufacturing a cable having a layer of self-repairing material (p. 18/ll. 9-11). Also, originally-filed claim 52: "[p]rocess for manufacturing a cable having a layer of self-repairing material, comprising the following steps."
(a) depositing the self-repairing material, maintained in a fluid state, on a cable core; and	(a) depositing the self-repairing material, maintained in a fluid state, on a cable core; and	The method comprises "depositing the self-repairing material, maintained in a fluid state, on a cable core" (p. 18/ll. 13-14). Also, originally-filed claim 52: "(i) depositing the self-repairing material, maintained in a fluid state, on a cable core."
(b) forming the layer of self-repairing material so as to obtain a uniform layer of predetermined thickness	(b) forming the layer of self-repairing material so as to obtain a uniform layer of predetermined thickness	The method comprises "forming the said layer of self-repairing material so as to obtain a uniform layer of a predetermined thickness" (p. 18/ll. 15-17). Also, originally-filed claim 52: "(ii) forming the said layer of self-repairing material so as to obtain a uniform layer of a predetermined thickness."
wherein said material is a dielectric that does not substantially absorb moisture or swell upon contact with moisture,	wherein said material is a dielectric that does not substantially absorb moisture or swell upon contact with moisture,	The self-repairing material can be a dielectric (p. 6/ll. 4-6). And the self-repairing material has a capacity to exert an effective blocking action against external moisture and/or has a low saturation water content (p. 9/ll. 27-35).
is flowable at about 25° C.	is flowable at about 25° C.	The self-repairing material is flowable at ambient temperature (p. 3/ll. 34-36 and p. 8/ll. 4-7), which is normally considered to be about 25°C (Hawley's Condensed Chemical Dictionary, 13th Edition, defines room temperature as an ambient temperature from 20-25°C).

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26. (cont.) and has capacity, wherein upon creation of a discontinuity in a layer of an insulation in the cable, the material will reestablish continuity in the layer of insulation of the cable in a reversible manner.	99. (cont.) and has capacity, wherein upon creation of a discontinuity in a layer of an insulation in the cable, the material will reestablish continuity in the layer of insulation of the cable in a reversible manner.	The self-repairing material has the "capacity, upon creation of a discontinuity in the coating layer, of re-establishing the continuity in the coating layer in a reversible manner" (p. 4/ll. 25-29). And the at least one coating layer may be one or more insulating coating layers (p. 4/ll. 7-9 and 15-17).